



Testing Evaluation Laboratories, Inc.
2002 Wood Court Suite 1 – Plant City, FL 33563
Phone: 813-754-9887

AAMA/WDMA/CSA 101/I.S.2/A440-08
Canadian Supplement A440S1-09

TEST REPORT SUMMARY

Test Report Issued To:

FLEETWOOD WINDOWS AND DOORS
1 Fleetwood Way
Corona, CA 92879

KONA 3800 Non-Impact Aluminum Casement Windows

Title	Summary of Results
Primary Product Designator	Class LC- PG65 1067 x 2135 (42 x 84) Type C
Design Pressure	+3112/-3112 Pa (+65.0/- 65.0 psf)
Operating Force	Pass
Air Infiltration	0.050 L/s•m ² (0.010 scfm/ft ²)
Air Infiltration/Exfiltration (A440S1-09)	Level A3: < 0.50 L/s•m ²
Water Resistance	467 Pa (9.75 psf)
Structural Test Pressure	+4668/-4668 Pa (+97.5/- 97.5 psf)
Forced Entry	No Entry

Reference should be made to Report No. TEL 01990815 for complete test results for AAMA/WDMA/CSA 101/I.S.2/A440-08.

For Testing Evaluation Laboratories, Inc.

Vivian K. Wright,
President



Testing Evaluation Laboratories, Inc.

2002 Wood Court Suite 1 – Plant City, FL 33563
Phone: 813-754-9887

**AAMA/WDMA/CSA 101/I.S.2/A440-08
Canadian Supplement A440S1-09**

Issued to:

**FLEETWOOD WINDOWS AND DOORS
1 Fleetwood Way
Corona, CA 92879**

IAS Lab Certification Number: TL-299

**Report No: TEL 01990815
Test Dates: October 3, 2013
Report Date: October 31, 2013**

Project Summary: Testing Evaluation Laboratories, Inc. (TEL) was contracted by Fleetwood Windows and Doors to perform tests on the Kona 3800 Casement and Awning Windows at TEL's Plant City, FL test facility. Performance Grade Class LC-PG65 1067 x 2134 (42 x 84) Type C was successfully achieved by this specimen.

Test specimen descriptions and results are reported herein.

Test Specifications: The test specimens were evaluated in accordance with the following:

***AAMA/WDMA/CSA 101/I.S.2/A440-08 and Canadian Supplement A440S1-09
Standard Specification for Windows, Doors and Unit Skylights***

Test Specimen Description:

Series / Model: Kona 3800 Casement and Awning Windows
Type: Aluminum Casement and Awning Windows
Overall Size: 1067 mm x 2135 mm (42.00" x 84.00") – (X)
Daylight Opening: 840 mm x 1908 mm (33.063" x 75.13") – (X)
Glazing Detail: See attached drawing numbers L-7031A for glazing details.
Frame Material: Aluminum
Finish: Mill Finish

For Tested Elevation, Vertical Cross Sections, Horizontal Cross Sections, Components, Frame Anchoring, Glazing Detail and Bill of Materials See Attached Drawing number L-7031A.

Test Results: Specimen 1 – Class LC-PG65 1067 x 2134 (42 x 84) Type C - Aluminum Casement Window (X)

The test results are tabulated as follows:

<u>Paragraph</u>	<u>Title of Test – Test Method</u>	<u>Results</u>	<u>Allowed</u>
5.3.1	Operating Force per ASTM E2068-00		
	Initiate Motion	19 N (4.2 lbf)	Report Only
	Maintain Motion	11 N (2.5 lbf)	45 N (10.00 lbf)
	Latches	36 N (8.1 lbf)	100 N (22.5 lbf)
5.3.2.1	Air Infiltration per ASTM E283 @ 75 Pa (1.57 psf)	0.050 L/s/m ² (0.010 SCFM/FT ²)	1.5 L/s/m ² (0.30 SCFM/FT ²)
	Air Infiltration per ASTM E283 @ 299 Pa (6.24 psf)	0.525 L/s/m ² (0.065 SCFM/FT ²)	1.5 L/s/m ² (0.30 SCFM/FT ²)
	Air Exfiltration per ASTM E283 @ 75 Pa (1.57 psf)	0.200 L/s/m ² (0.040 SCFM/FT ²)	1.5 L/s/m ² (0.30 SCFM/FT ²)
	Air Exfiltration per ASTM E283 @ 299 Pa (6.24 psf)	0.605 L/s/m ² (0.121 SCFM/FT ²)	1.5 L/s/m ² (0.30 SCFM/FT ²)
Note #1:	<i>The tested specimen meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440-08 (A440S1-09) for air infiltration/exfiltration.</i>		
5.3.3.2	Water Resistance per ASTM E547		See Note #2
5.3.4.2	Uniform Load Structural per ASTM E330		See Note #2
Note #2:	<i>The client opted to start at a pressure higher than the minimum required. Those results are listed under "Optional Performance".</i>		
5.3.5	Forced Entry resistance per ASTM F588 Type B Grade 10		
	Disassembly Test	No Entry	No Entry
	Test B1 – B3	No Entry	No Entry
	Sash/Panel Manipulation Test	No Entry	No Entry
	Lock Manipulation Test	No Entry	No Entry
5.3.6.4.3	Sash Vertical Deflection Test 270N (60 lbf)	(9.881 mm (0.389"))	20.3 mm (0.80") Max
5.3.6.6.2	Distributed Load Test 300 Pa (6.2 psf)	No Damage	No Damage
Optional Performance			
4.3.2.1	Water Resistance per ASTM E547 (without insect screen) 467 Pa (9.75 psf)	No Leakage	No Leakage

Specimen 1: Optional Performance – Continued

4.4.2.6 Optional Performance

Range	Time (seconds)	Load Pa (psf)	Location	Deflection mm (in.)	Allowable mm (in.)
Half Test Positive	30	1556 (32.50)			
Test Positive	30	3112 (65.00)	1	0.406 (0.016)	See Note #3
Half Test Negative	30	1556 (32.50)			
Test Negative	30	3112 (65.00)	1	1.702 (0.067)	See Note #3

Note #3: *The deflections reported are not limited by AAMA/WDMA/CSA 101/I.S.2/A440-08 (A440S1-09) for this product designation. The deflection data is recorded in this report for special code compliance and information only. See Note #4 for deflection locations.*

Range	Time (seconds)	Load Pa (psf)	Location	Deflection mm(in.)	Set mm(in.)	Allowable mm(in.)
Half Proof Positive	10	2334 (48.75)				
Proof Positive	30	4668 (97.50)	1	1.702 (0.067)	0.584 (0.023)	3.810 (0.150)
Half Proof Negative	10	2334 (48.75)				
Proof Negative	30	4668 (97.50)	1	2.134 (0.084)	0.635 (0.025)	3.810 (0.150)

Note #4: *Deflection/Set for Location 1 measured at center of top rail.*

Conditions, Terms, and General Notes Regarding These Tests

The product tested Has Been compared to the detailed drawing, bill of materials and fabrication information supplied by the client so named herein. Our analysis, which includes dimensional and component description comparisons, indicate the tested product and engineering information supplied by the client "Are Equivalent". The report and representative samples will be retained for four years from the date of initial test.

These test results were obtained by employing all requirements of the designated test methods with no Deviations unless explicitly noted in test report. The test results and specimen supplied for testing are in compliance with the reference.

The test results are specific to the product tested by this laboratory and of the sample supplied by the client named herein, and they relate to no other product either manufactured by the client, a fabricator of the client or of the client or of installed field performance.

This test report does not constitute certification of this product, but only that the above test results were obtained using the designated test methods and they indicate compliance with the performance requirements (paragraphs as listed) of the above referenced specifications.

Testing Evaluation Laboratories, Inc. makes no opinions or endorsements regarding this product and its performance. This report may not be reproduced or quoted in partial form without the expressed written approval of Testing Evaluation Laboratories, Inc.

Testing Evaluation Laboratories, Inc.'s letter, reports, its name or insignia or mark are for the exclusive use of the client so named herein and any other use is strictly prohibited. The report, letters and the name of Testing Evaluation Laboratories, Inc., its seal or mark shall not be used in any circumstance to the general public or in any advertising.

Limitation of liability: Due diligence was used in performing the tests and reporting the results. By acceptance of this report, this client agrees to hold harmless and indemnify Testing Evaluation Laboratories, Inc., its employees, subcontractors and officers and owners against all claims and demands of any kind whatsoever, which arise out of or in any manner connected with the performance of work referred to herein.

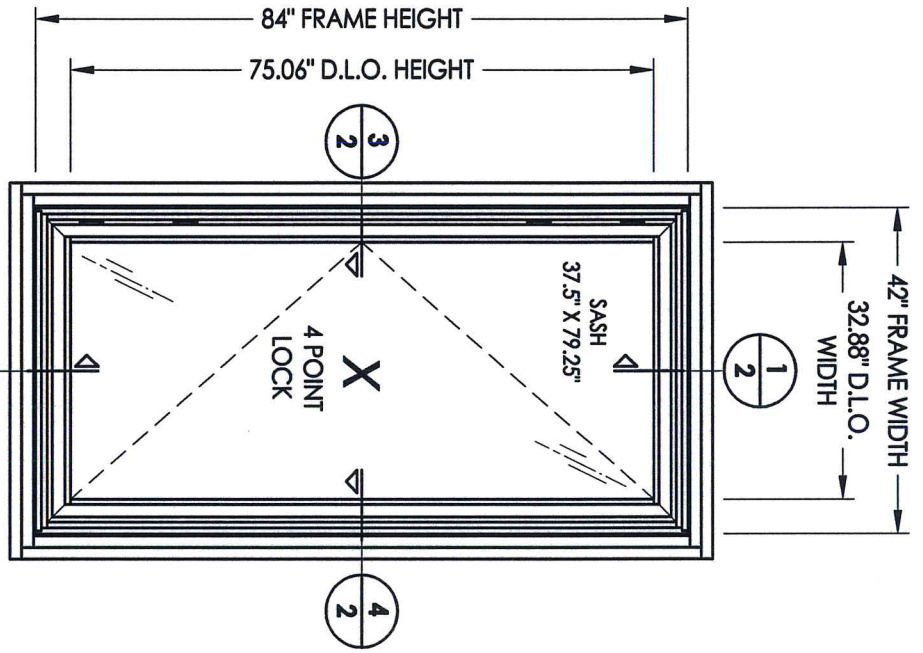
Testing Evaluation Laboratories, Inc.



Vivian K. Wright,
President

Revision Log

Rev No.	Date	Page(s)	Revision(s)
0	10/21/2013	NA	Original Report Issue



SPEC. #1D

Testing Evaluation Laboratories Inc
 Specimen Complies with Drawing
 Deviations Noted - TEL # 01990815
 Date 10.31.12 Verified by *gud*

TABLE OF CONTENTS

SHEET #	DESCRIPTION
1	Table of contents and test elevation
2	Horizontal and vertical cross sections
3	Frame anchoring
4	Components and glazing detail
5	Bill of materials

PRODUCT: **FLEETWOOD
KONA 3800 CASEMENT WINDOW**

PART OR ASSEMBLY:
**TABLE OF CONTENTS
AND TEST ELEVATION**

NO.	DATE	BY

R⁹M BUILDING
CONSULTANTS, INC.
813.659.9197

DATE: 9/25/13

SCALE: N.T.S.

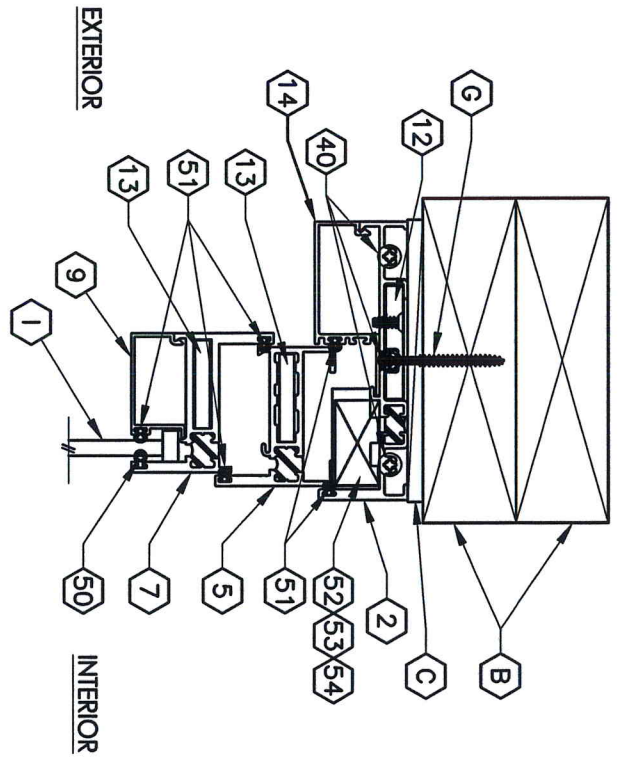
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CHK. BY: LFS

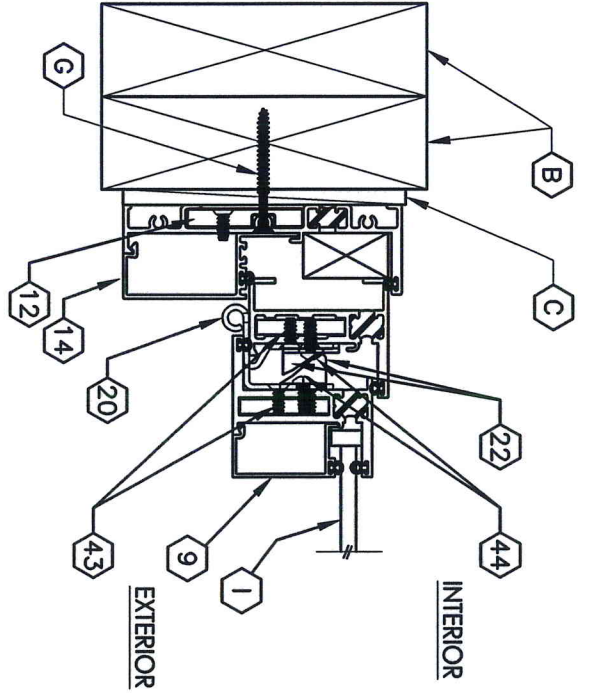
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L-7031A

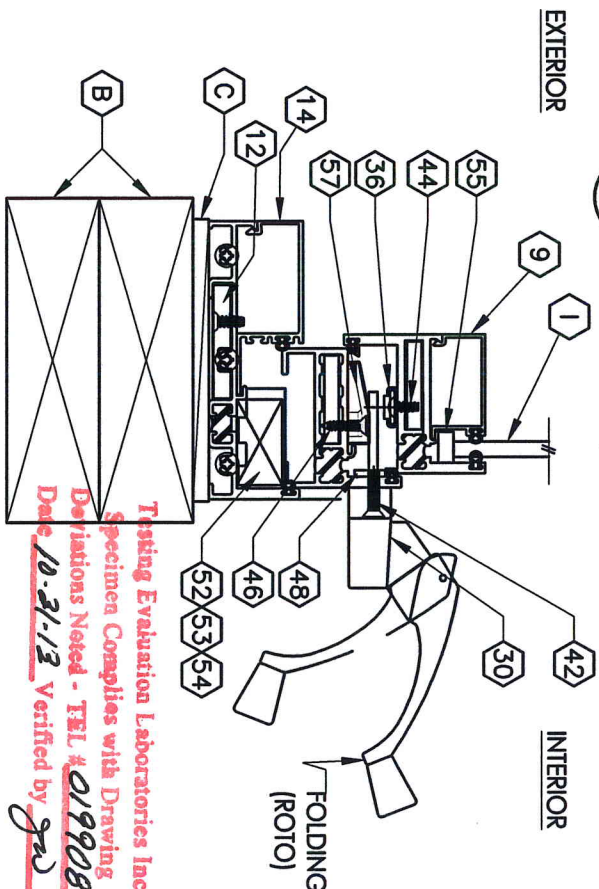
SHEET 1 OF 5



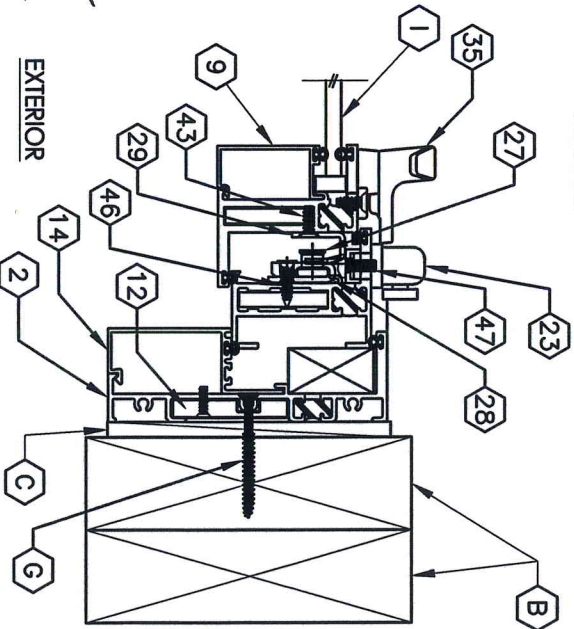
1
2
VERTICAL CROSS SECTION



3
2
HORIZONTAL CROSS SECTION



2
2
VERTICAL CROSS SECTION



4
2
HORIZONTAL CROSS SECTION

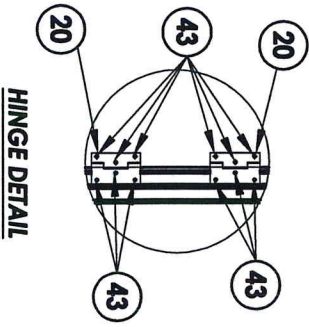
Testing Evaluation Laboratories Inc
Specimen Complies with Drawing
Deviations Noted - TEL # 01990815
Date 10-31-13 Verified by *gao*

PRODUCT:	FLEETWOOD KONA 3800 CASEMENT WINDOW
PART OR ASSEMBLY:	HORIZONTAL AND VERTICAL CROSS SECTIONS

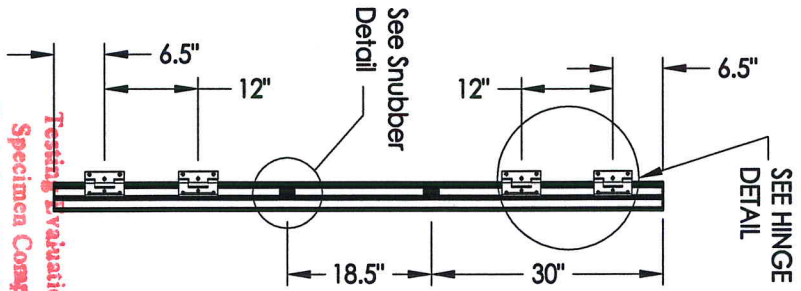
NO.	DATE	REVISIONS	BY

RW BUILDING CONSULTANTS, INC.
813.659.9197

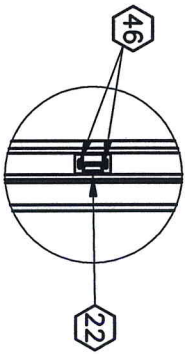
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SCALE:	N.T.S.
DWG. BY:	JK
CHK. BY:	LFS
DRAWING NO.:	L-7031A
SHEET	2 OF 5



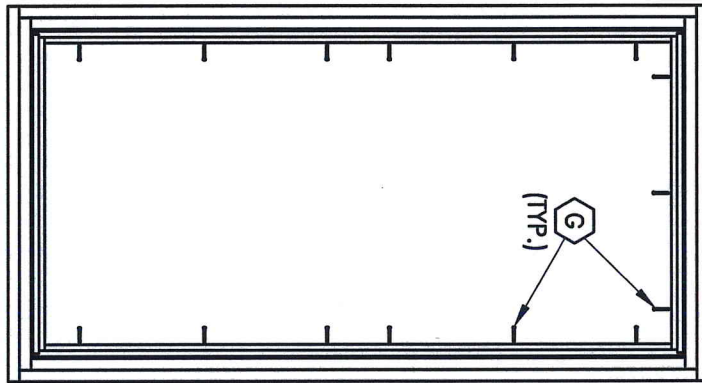
HINGE DETAIL



Testing Evaluation Laboratories Inc
 Specimen Complies with Drawing
 Deviations Noted - TEL # 01990815
 Date 10-31-13 Verified by *gru*
HINGE JAMB

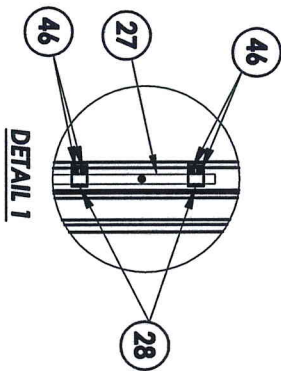


SNUBBER DETAIL



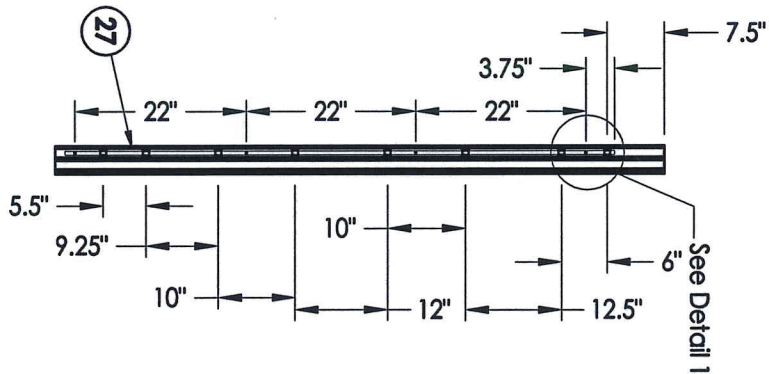
FRAME ANCHORING
 2X buck construction

16" O.C. (TYP.) 8" 6" (TYP.)



DETAIL 1

LOCK JAMB
 Locking Points (4)



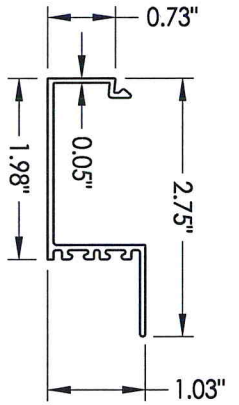
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 SCALE: N.T.S.
 DWG. BY: JK
 CHK. BY: LFS
 DRAWING NO.: L-7031A
 SHEET 3 OF 5

RM BUILDING CONSULTANTS, INC.
 813.659.9197

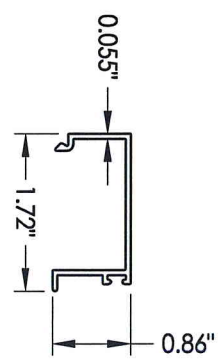
NO.	DATE	REVISIONS	BY

PRODUCT: **FLEETWOOD KONA 3800 CASEMENT WINDOW**

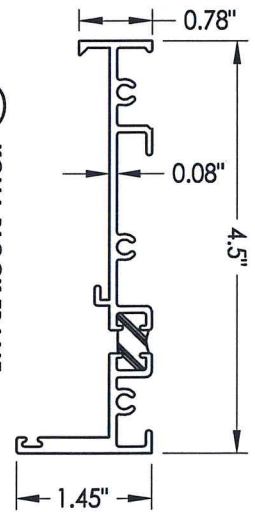
PART OR ASSEMBLY: **FRAME ANCHORING**



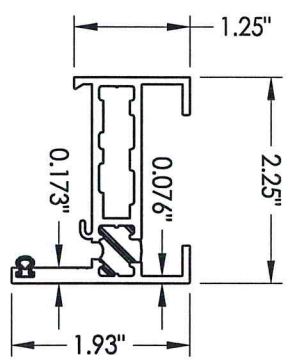
14 INSERT STOP
011448



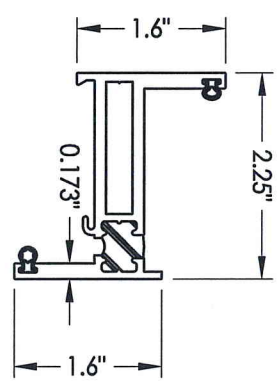
9 GLASS STOP 1/4"
006715



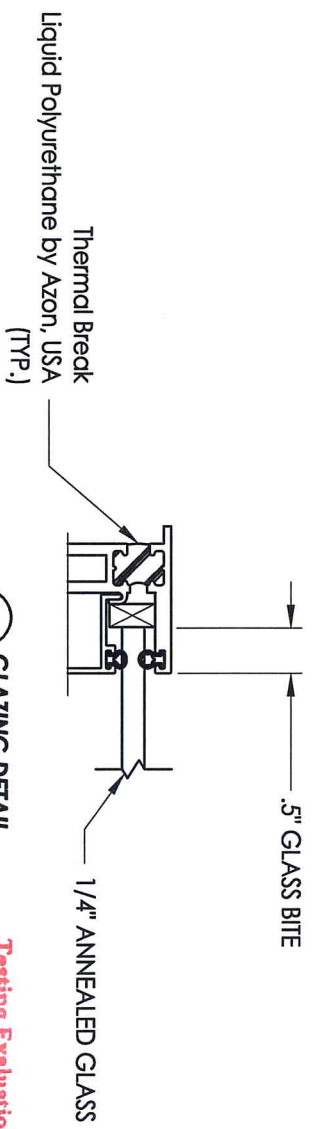
2 KONA BLOCK FRAME
011239



5 BLOCK FRAME
5278C1




7 ZEE BAR (PANEL)
H006733



1 GLAZING DETAIL

Testing Evaluation Laboratories Inc
 Specimen Complies with Drawing
 Deviations Noted - TEL # 01990805
 Date 10-31-13 Verified by *grd*

DATE: 9/25/13		SCALE: N.T.S.		DWG. BY: JK		CHK. BY: LFS		DRAWING NO.: L-7031A		SHEET 4 OF 5	
 BUILDING CONSULTANTS, INC. 813.659.9197		PRODUCT: FLEETWOOD KONA 3800 CASEMENT WINDOW PART OR ASSEMBLY: COMPONENTS AND GLAZING DETAIL		REVISIONS NO. DATE BY							

BILL OF MATERIALS		
ITEM #	DESCRIPTION	MATERIAL
B	2X BUCK SG >= 0.55	WOOD
C	1/4" MAX. SHIM SPACE	-
G	#10 X 2" PPH WOOD SCREW	STEEL
2	KONA BLOCK FRAME	6063-T6 ALUM
5	WESTWOOD BLOCK FRAME	6063-T6 ALUM
7	WESTWOOD ZEE BAR (PANEL)	6063-T6 ALUM
9	GLASS STOP (1/4")	6063-T6 ALUM
12	SHEAR BLOCK	ALUM
13	CORNER KEY	ALUM
14	INSERT STOP	ALUM
20	SS. BUTT HINGE	SS
22	SNUBBER-COMMERCIAL PULL-IN BLOCK	SS
23	MULTIPOINT LOCK HANDLE	SS
27	4 POINTS LOCKING BAR	SS
28	TIE BAR GUIDE	-
29	KEEPER	SS
30	CASEMENT ROTOR GEAR 13.5"	SS
35	CAM HANDLE / STRIKE PLATE	SS
36	CASEMENT SS. TRACK	SS
42	MACHINE SCREW NO 10-32, FHP .75"	STEEL
43	SCREW NO 10, UFHP .5"	STEEL
44	SCREW NO 8, PHP, .50"	STEEL
46	SCREW NO 8, FHP, .750"	STEEL
47	MACHINE SCREW NO 10-32, PHP .5"	STEEL
48	BACK UP NUTS	STEEL
50	BULB VINYL (EPDM 70 DUROMETER)-TREMCO	-
51	MINI BULB VINYL(EPDM 70 DUROMETER)-TREMCO	-
52	WOOD BLOCK .750" X 1.250"	-
53	ALUMINIUM BLOCK .750" X 1.250"	-
54	PVC BLOCK .750" X 1.250"	-
55	SETTING BLOCK	-
57	PIVOT SHIM	-

Testing Evaluation Laboratories Inc
 Specimen Complies with Drawing
 Deviations Noted - TEL # 01990815
 Date 10-31-13 Verified by *gnd*

PRODUCT:
**FLEETWOOD
 KONA 3800 CASEMENT WINDOW**

PART OR ASSEMBLY:
BILL OF MATERIALS

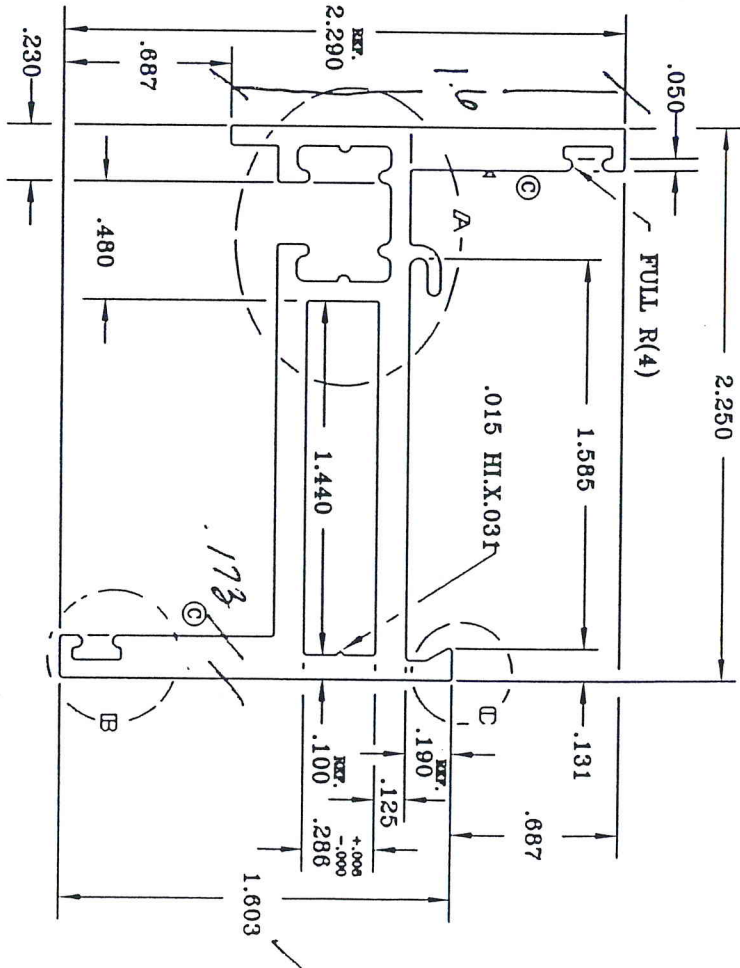
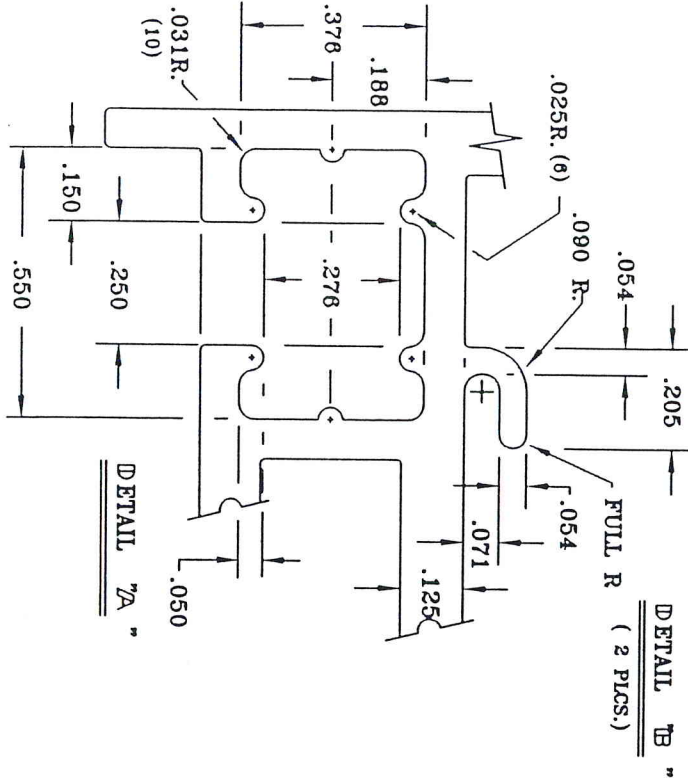
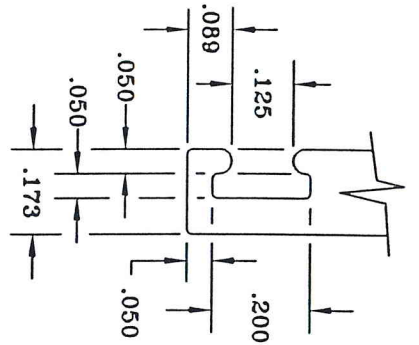
NO.	DATE	BY

REVISIONS



DATE: **9/25/13**
 SCALE: **N.T.S.**
 DWG. BY: **JK**
 CHK. BY: **LFS**
 DRAWING NO.: **L-7031A**
 SHEET **5** OF **5**

① THERMAL BREAK AREA .211



Testing Evaluation Laboratories Inc
 Specimen Complies with Drawing
 Deviations Noted - TEL # 01990815
 Date 10-31-13 Verified by JRD

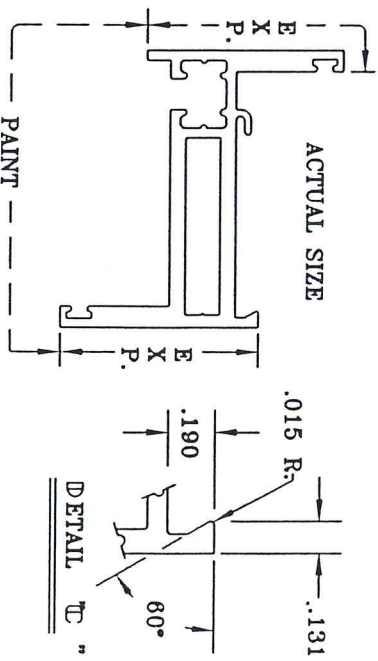
P.010 R. X .010DEEPI.D. MARK .080
 NOTE: TYP. WALL THICKNESS AS NOTED
 UNPLATED CORRUGATED ALU B.

COMPLIANCE	REV	DATE	BY	CHKD	REASON
	1	1.076	V/P		
		16.078	FLEEB042		
		3/14/03	MATL 6083-T6		

DATE	BY	CHKD	REASON
9/21/06	ED	ED	REWORKED UNDERCUTS
9/14/08	ED	ED	REWORKED .188 STEP
7/18/08	ED	ED	REWORKED WALL 1.008/216.418

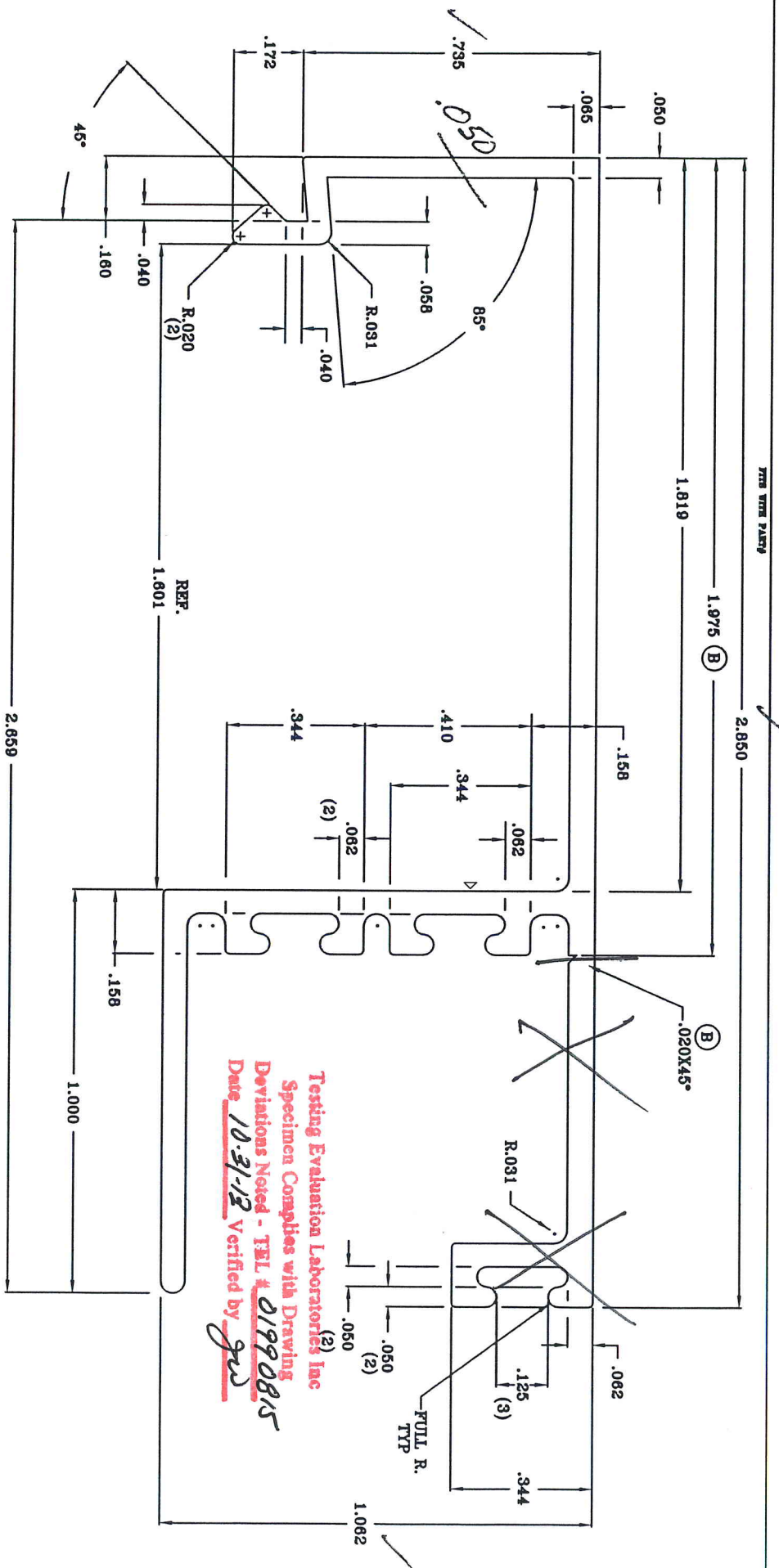
DATE	BY	CHKD	REASON
9/21/06	ED	ED	REWORKED UNDERCUTS
9/14/08	ED	ED	REWORKED .188 STEP
7/18/08	ED	ED	REWORKED WALL 1.008/216.418

DATE	BY	CHKD	REASON
9/21/06	ED	ED	REWORKED UNDERCUTS
9/14/08	ED	ED	REWORKED .188 STEP
7/18/08	ED	ED	REWORKED WALL 1.008/216.418



SIERRA ALUMINUM COMPANY
 540 Fleetwood Drive
 Blytheville, California 92308
 (909)781-7900 FAX (909)781-7964

FLEETWOOD ALUMINUM PRODUCTS, INC.
 ZEE BAR
 H-006733

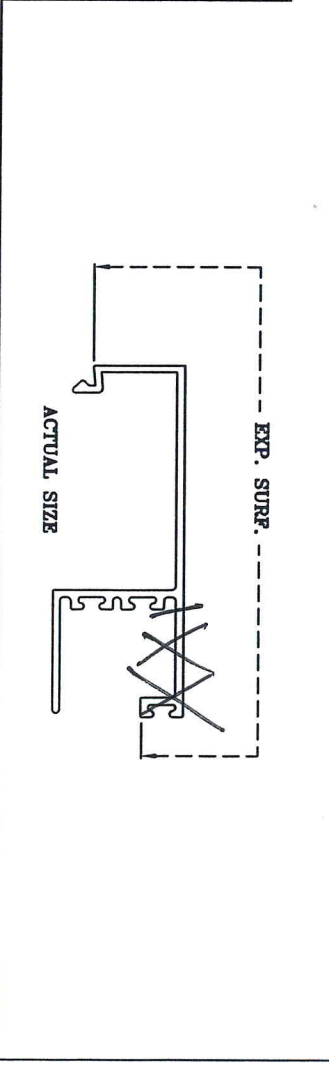


▷.010 R. X .010DEP.D. MARK NOTE: .058 TYP. VALUE EXCEPT AS NOTED
 UNPLATED COPPER 210 S

CONTAINER	8	SEE SPEC	5	SPLICE	2		
AREA	.415	POCKET	3	SEE	011448		
WT/PT	.498	V/P	POCKET	INSULATOR	3-6		
FILE	13.469	FILE	28807	SEE SPEC	9X2		
DATE	4/24/02	MATL.	6063-T6	Q	REWORKER	AMW/LLP	SD
BY		FINISHED DIMENSIONS		UNTIL			9/29/08
BY		DRUMS OTHER THAN NOTED		UNTIL			
BY		CONTAINER		REWORKER			

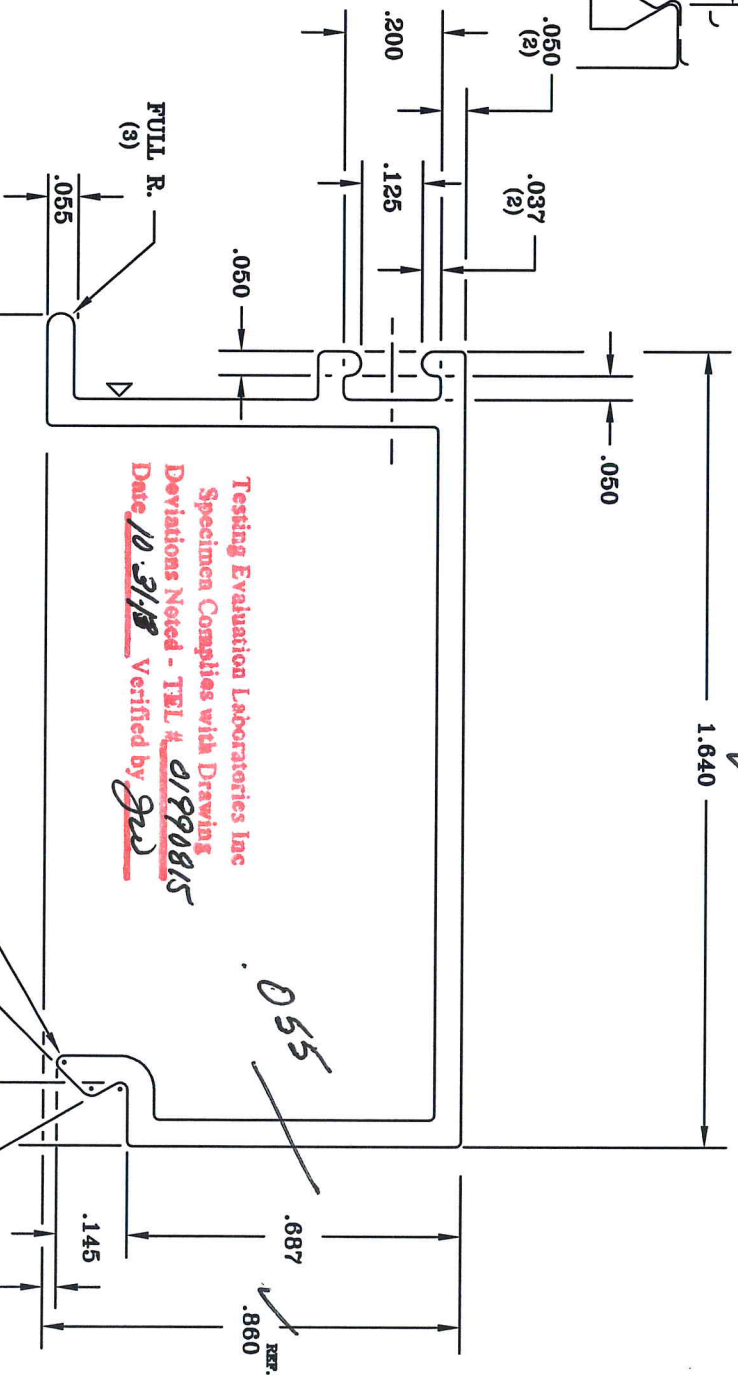
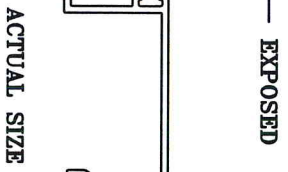
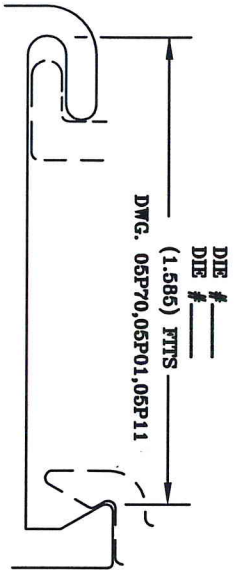
SIERRA ALUMINUM COMPANY
 2346 Fleetwood Drive
 Redwood City, CA 94061
 (650) 751-7800 FAX (650) 751-7844

SIERRA ALUMINUM COMPANY
 FLEETWOOD ALUMINUM
 PART NAME: GLASS STOP
 SCALE: 4:1
 PART NO.: 3811
 N/C
 011448



Testing Evaluation Laboratories Inc
 Specimen Complies with Drawing
 Deviations Noted - TEL # 01990815
 Date 10-31-12 Verified by *gus*

THIS VIEW SHOWN

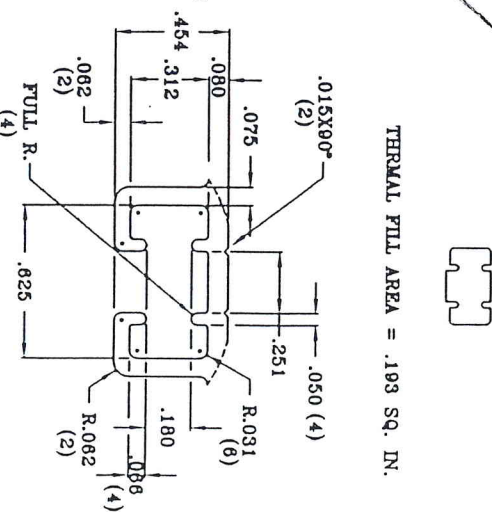
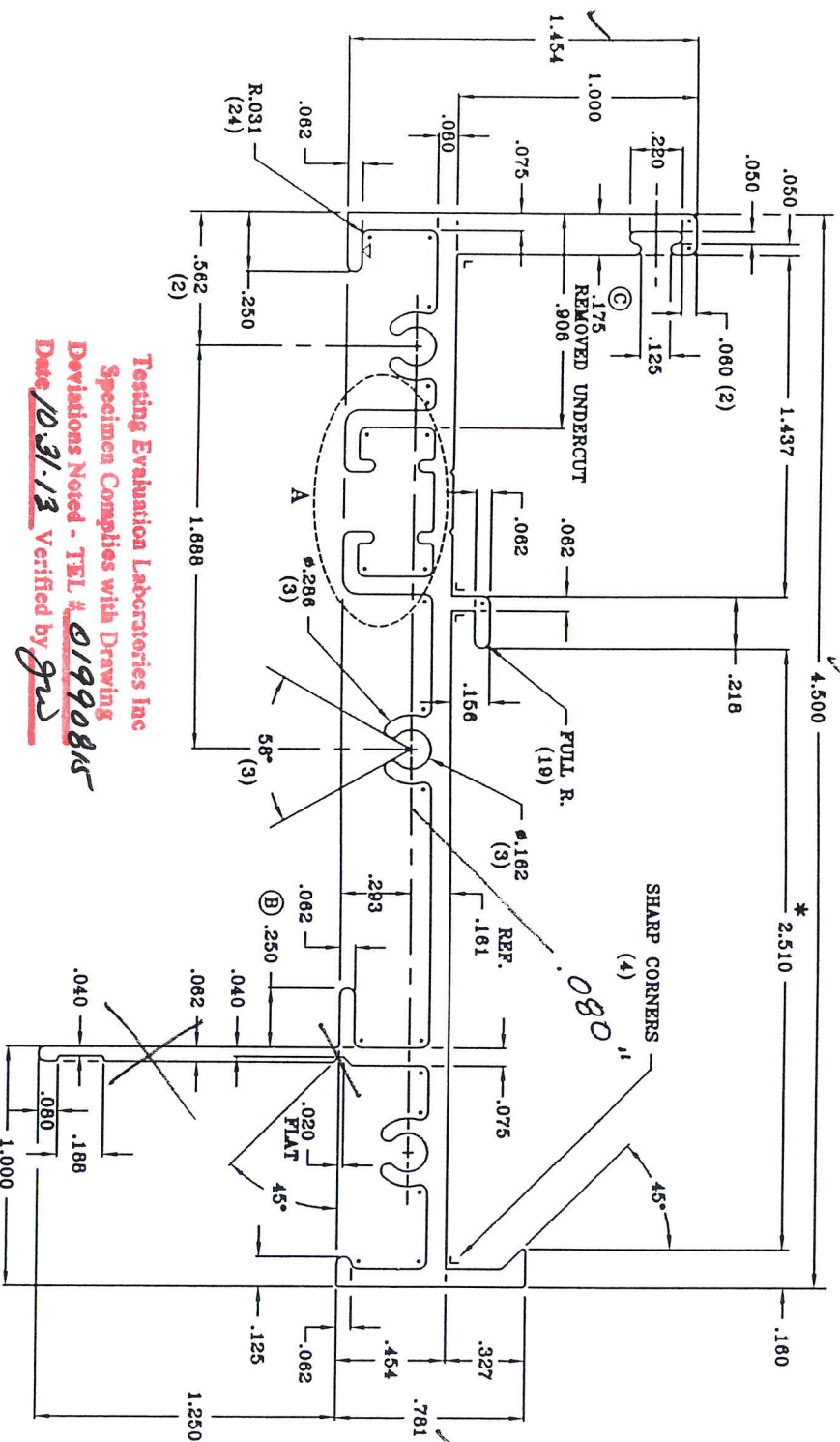


Testing Evaluation Laboratories Inc
 Specimen Complies with Drawing
 Deviations Noted - TEL # 01990815
 Date 10-31-18 Verified by *gnd*

D-010 R. X .010DEEPLD. MARK .055 TYP. THIS EXCEPT AS NOTED
 UNDIMENSIONED CORNERS .010 R.

CONTAINER	DIE KING	SPACER KING	NO.	TR. THIS EXCEPT AS NOTED
AREA	202	4	3979	
WT./TZ	.242	V/P	4-9	
FEEL	7.339	FLIEE	6045	9X1
DYK. BY	KEN DATE	6/09/92	MAT'L	6063-T6
CHD.			STANDARD TOLERANCES	B
BY	DATE		FINISH OPERATIONS NOTED	MAT'L WAS 6063-T6
SIERRA ALUMINUM COMPANY		FLEETWOOD ALUM. PROD.		SCALE
2445 Piedmont Blvd Riverside, California 92509 (909)781-7900 FAX (909)781-7964		PART NAME GLASS STOP 1/4"		4:1
				PART NO. 05P05
				TR. NO. 006715

1.72



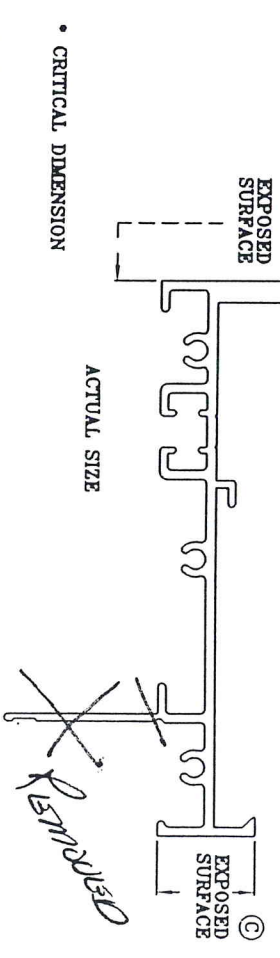
THERMAL FILL AREA = .193 SQ. IN.

DETAIL "A"
SCALE: 4:1

Testing Evaluation Laboratories Inc
Specimen Complies with Drawing
Deviations Noted - TEL # 01990815
Date 10.31.13 Verified by *gms*

D.010 R. X .010DEP1.D. MARK .075
UNFINISHED CORNERS 210 R.

CONTAINER	7/8	DES KING	5	PLACES KING	2	DATE	BY	DATE
AREA	.921	POINTS	1	NO.	11238			
WT/VT	1.105	V/T	POCKET	RELATION	11238	C	ADD UNDERCUT	11/11/08
PNEL	22.854	FILE	27176	DES KING	9X2	C	REMOVED UNDERCUT	11/18/08
DATE	KEN	DATE	11/12/03	VALT.	6063-T6	B	ADDED MACHINING DIM.	7/29/01
CHGD.	BY	DATE		FINISHED TOLERANCES				
				UNTILS OPERATING POINTS				
				CHANGES				
				SCALE	2:1			
				PART NO.	930			
				DATE	N/C			
				PART NO.	011239			



SIERRA ALUMINUM COMPANY
2544 Piedmont Drive
Birmingham, AL 35209
(909) 761-7800 FAX (909) 771-7944

FLEETWOOD ALUMINUM
PART NAME
4.500 FRAME BLOCK

SCALE 2:1
PART NO. 930
DATE N/C
PART NO. 011239

* CRITICAL DIMENSION

REMOVED